



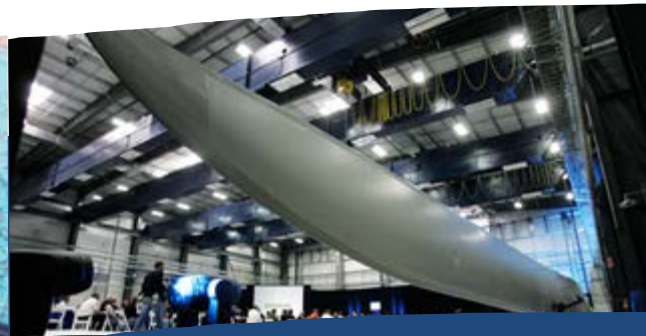
INTERNATIONAL
TRADE
ADMINISTRATION

2015 Top Markets Report

Renewable Energy and Smart Grid

An Assessment Tool for Focusing
U.S. Government Resources

March 2015



I&A Top Markets Series

A Market Assessment Tool for U.S. Exporters and Policy-Makers

I&A will publish detailed *Top Markets Reports* on approximately 19 different sectors in 2015. Each report is based on a detailed, sector-specific methodology for projecting exports and provides country case studies, and in some cases, sector snapshots.

Helps exporters determine their NEXT market by comparing opportunities across borders

Helps policy-makers prioritize export promotion and trade policy objectives by focusing on areas of largest opportunity

Ranks projected *future* export markets for U.S. firms, rather than investment potential

Identifies export promotion strategies targeted at markets and subsectors most supportive of exports

Provides market intelligence to ITA's export-oriented clients

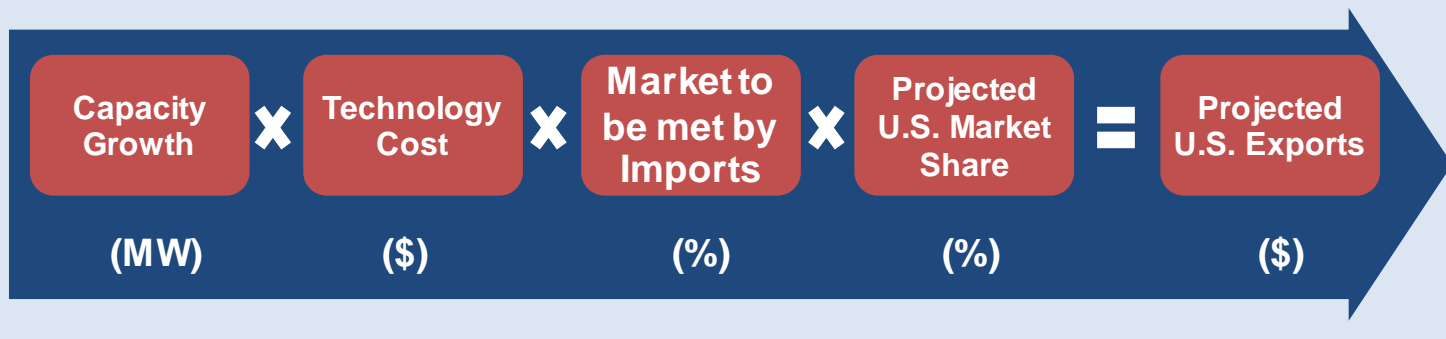


An Improved Methodology

Projecting Renewable Energy Power Generation Exports

The methodology used in the 2015 *Renewable Energy Top Markets Report* includes country-specific LCOE and \$/MW estimates from *Bloomberg New Energy Finance*, as well as updated capacity growth and market share projections. Geothermal projections were developed alongside the Geothermal Energy Association (GEA) to ensure additional accuracy for ITA's projections.

Methodology for Ranking Markets



Key Findings

Understanding the Rankings

Near-Term Renewable Energy Export Rankings (2015-2016)

1. Canada	16.Ecuador
2. Japan	17.New Zealand
3. China	18.France
4. Brazil	19.Thailand
5. Mexico	20.Honduras
6. Kenya	21.Denmark
7. India	22.Philippines
8. Chile	23.United Kingdom
9. Indonesia	24.El Salvador
10.Saudi Arabia	25.Russia
11.Germany	26.South Korea
12.Turkey	27.Spain
13.South Africa	28.Sudan
14.Egypt	29.Peru
15.Uruguay	30.Belgium

- China is expected to account for more than one-third (35%) of all non-U.S. capacity installations over the next two years. Its renewable energy investment is expected to be split relatively evenly between solar, wind, and hydropower through 2016.
- Other key developers of new capacity outside the United States will be Japan, India, Brazil, and the European Union (particularly, Germany and the United Kingdom).
- The sector's growth is now global, strongly taking root in Asia, Latin America, and Africa. Over the remainder of the decade, this trend should continue.
- Unfortunately, U.S. exporters are largely ill-positioned to benefit from rising demand globally. According to ITA's projections, exporters will capture just 3.2% of the global import market.
- U.S. exporters are the most competitive in the geothermal sector (38% market share) though that sector remains far smaller than other renewable energy opportunities. U.S. exporters are expected to capture just 5.2% of the world's solar imports, 8.0% of its wind imports, and barely 1.0% of its hydropower imports.

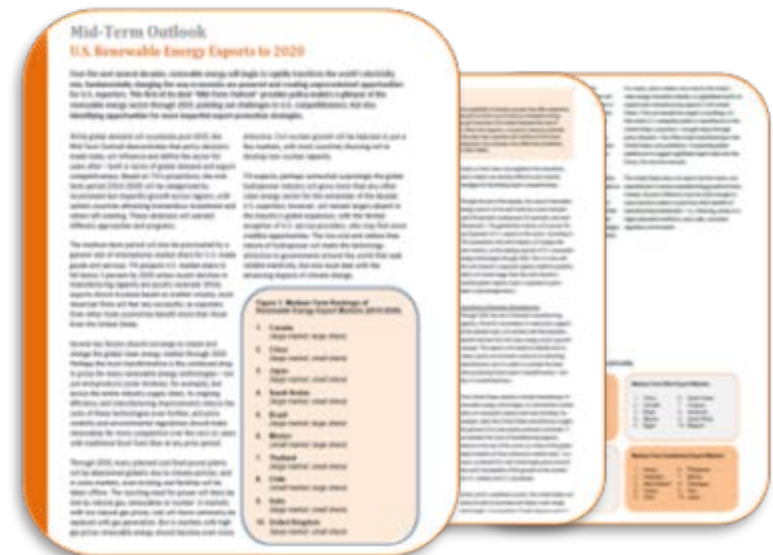


Medium-Term Report

Projecting Renewable Energy Exports Through 2020

The 2015 *Renewable Energy Top Markets Report* ranks opportunities through both the short-term (to 2016) and medium-term (through 2020), responding to requests from clients and interagency partners for longer-term analysis.

- The medium-term period (2015-2020) will be categorized by inconsistent but impactful growth across regions, with certain countries attracting tremendous investment and others left wanting.
- The period will also be punctuated by a lack of market share for U.S. exporters. ITA projects U.S. market share to fall below 2 percent by 2020, unless recent declines in manufacturing capacity are quickly reversed.
- ITA expects the global hydropower industry will install more capacity outside the United States than any other sector. U.S. exporters, however, will remain largely absent in the industry's expansion, with the exception of U.S. service providers, who may find more credible opportunities.
- The solar industry, particularly distributed photovoltaic (PV) technologies, will experience significant growth globally. The large-scale participation of U.S. exporters remains uncertain.
- China, India and Japan are expected to support over half of the new renewable energy capacity installed outside the United States.



Four Types of Markets

ITA's Analysis Allows a Differentiated Strategy by Market Type

The most lasting impact of the 2014 *Renewable Energy Top Markets Report* – the categorization of markets into four types – remains an important aspect of this year's version.

Large Market; Large Share

If a market is large and U.S. firms enjoy considerable market share, then exporters should focus on making as many connections as possible.

USG Activities:

- *Traditional trade missions*
- *Gold Key Service*
- *Remove remaining trade barriers*
- *International Buyers Program trade shows*

Large Market; Small Share

Consider whether the lack of market share is based on insufficient competitiveness; or, whether U.S. products are kept out of the market by protectionism. If a barrier exists, report it.; otherwise look for niche opportunities.

USG Activities:

- *Protect existing market share*
- *Find niche opportunities*

Small Market; Large Share

Exporters should participate in market development activities and position themselves for early success.

USG Activities:

- *Trade policy missions*
- *Technical capacity building*
- *Reverse trade missions*
- *Development assistance*

Small Market; Small Share

Finally, some markets are neither large nor support significant U.S. market share. Understand that opportunities could be sparse and expect few other American companies to succeed.



Putting it All Together

Recommendations for U.S. Government Action

The Top Markets Analysis is a strategic tool that enables market and sub-sector prioritization by ITA and its partners. The study also supports ITA recommendations to the inter-agency that are actionable and data-driven.

Key findings in the 2015 *Renewable Energy Top Markets Report* :

- 1 A larger focus on developing Latin American markets where U.S. exporters are expected to capture a greater share of the import market
- 2 A focus on quality and innovation in potential export markets – when foreign buyers purchase U.S.-sourced clean energy products, it is often because of these characteristics
- 3 U.S. Government financing offers both a means to support export sales and leverage to seek the removal of trade barriers

U.S. Market Share – Global vs. Western Hemisphere

Technology	Share of Global Import Market	Share in Western Hemisphere	Change
Solar	5.4%	16.0%	↑
Wind	8.0%	23.6%	↑
Hydropower	1.0%	4.0%	↑
Geothermal	38.1%	51.0%	↑

Note: For the purpose of calculation, the “Western Hemisphere” includes Argentina, Brazil, Canada, Chile, Colombia, Cost Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, Uruguay, and Venezuela.

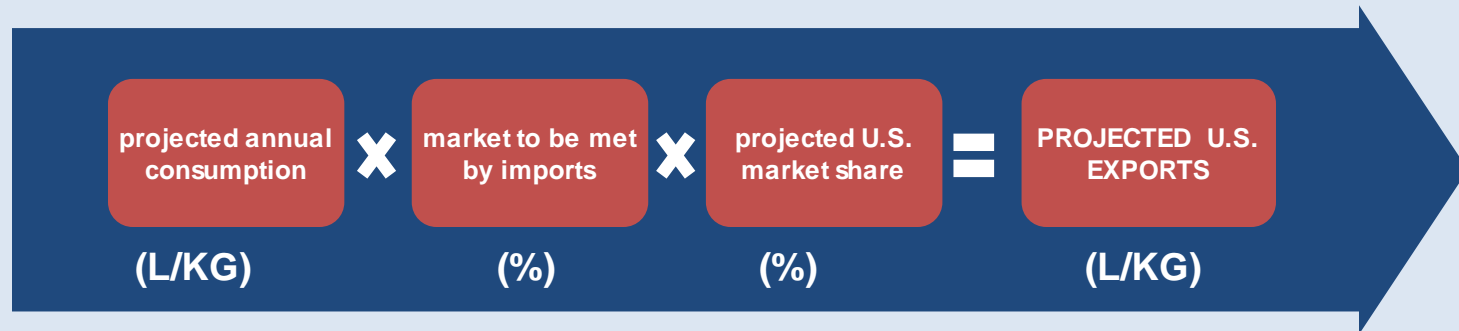


Renewable Fuels – Ethanol and Wood Pellets

Methodology

The *2015 Renewable Fuel Top Markets Report* is a spinoff from the *Renewable Energy Top Markets Report*. It ranks 23 different markets in terms of projected U.S. exports in the short term (2015-2016). It offers analysis to prioritize U.S. Government export promotion and trade policy efforts towards those markets and subsectors most likely to support export growth. Like last year's version, ITA will produce both a public and internal version.

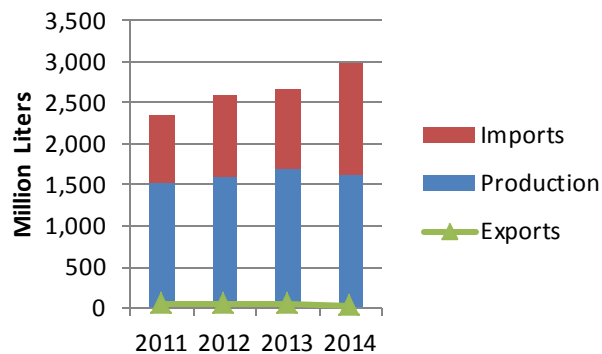
Methodology for Ranking Markets



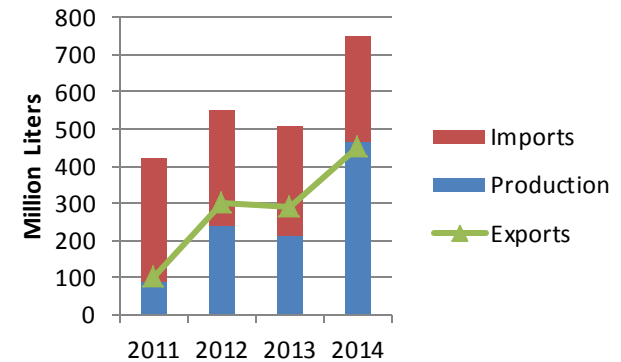
Calculating Import Demand

Consumption is usually met by domestic production and imports... but some countries also export. Formula for import demand must capture this dynamic.

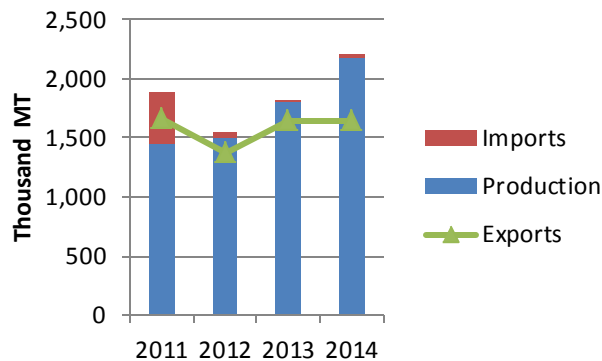
**Ethanol:
Canada**



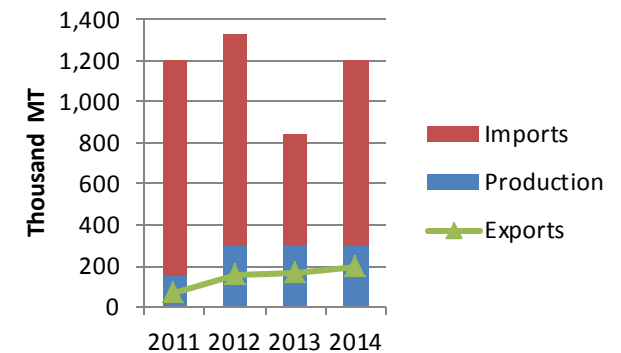
**Ethanol:
Netherlands**



**Wood
Pellets:
Canada**



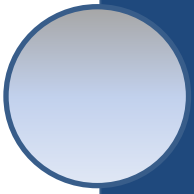
**Wood
Pellets:
Netherlands**



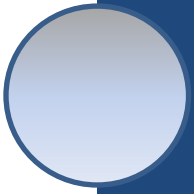
Countries ranked by the Renewable Fuel Top Markets Study



The countries were selected based on two factors:
1) U.S. export patterns for 2012-2014, and
2) the existence of supportive policy environments that maintain or grow the renewable fuels markets.



Two of the top destinations for ethanol, UAE and Tunisia, were not included in the rankings because of the unpredictability of demand (discretionary blending for octane boosting).



Ethanol exports represented a wide variety of regions. Pellet exports, by contrast, were mostly to Europe with additional growing demand in Korea and Japan. Therefore each sector will be ranked separately.

NOTE: Biodiesel will not be covered in the 2015 report due to limited export markets and domestic policy uncertainty.

	Ethanol	Pellets
Belgium	•	•
Brazil	•	
Canada	•	•
China	•	
Colombia	•	
Denmark		•
Finland	•	
France		•
Germany		•
Italy		•
Jamaica	•	
Japan		•
Korea	•	•
Mexico	•	
Netherlands	•	
Nigeria	•	
Panama	•	
Peru	•	
Philippines	•	
Singapore	•	
Spain	•	
Sweden		•
UK	•	•



Key Recommendations for Renewable Fuels Exporters

- A larger focus for promotional efforts on Asian markets
 - Ethanol: Philippines, China, Singapore, Korea, India
 - Pellets: Japan, Korea
- Leverage DOC resources
 - Gold Key Services – develop direct relationships with importers
 - Advocacy – when biomass utilities are government owned (i.e., Korea)
 - MDCP – utilize a variety of strategies to increase opportunities and grow the market

Long Term Challenges for Ethanol and Wood Pellet Exporters

How can USG and industry work together to address:

- Protectionism
- Trade barriers
- Sustainability concerns



Smart Grid Top Markets Methodology and Rankings

Ranks 30 markets in terms of U.S. smart grid industry export growth potential through 2015 and presents analysis that will help prioritize U.S. Government export promotion efforts and target resources toward markets with the highest potential for future growth in U.S. smart grid exports.

Weighted Scorecard System Based on Four Sets of Data & Analysis



Top Markets for U.S. Smart Grid Export Growth in 2015

- | | | | |
|------------------------|-----------------------|------------------------|---------------------|
| 1. <i>Canada</i> | 6. <i>Singapore</i> | 11. <i>Mexico</i> | 16. <i>Germany</i> |
| 2. <i>Japan</i> | 7. <i>China</i> | 12. <i>Turkey</i> | 17. <i>Korea</i> |
| 3. <i>Saudi Arabia</i> | 8. <i>Chile</i> | 13. <i>France</i> | 18. <i>Austria</i> |
| 4. <i>Australia</i> | 9. <i>Philippines</i> | 14. <i>Malaysia</i> | 19. <i>Brazil</i> |
| 5. <i>UK</i> | 10. <i>Vietnam</i> | 15. <i>Netherlands</i> | 20. <i>Colombia</i> |



Smart Grid Top Markets Results

Market Cluster Analysis

	Export Market Clusters	Common Characteristics	Examples (Rank)
TOP MARKETS FOR 2014-2015 EXPORT GROWTH	Major Trade Partners	<ul style="list-style-type: none"> ✓ Top U.S. Trade Partners ✓ Geographic and/or Cultural Proximity ✓ History of Success for U.S. Electric Power Equipment Suppliers 	Canada (1) UK (5) Mexico (11)
	Smart Grid Procurers	<ul style="list-style-type: none"> ✓ Growing smart grid investment ✓ Major procurements and deployments underway ✓ Advanced Metering Infrastructure a near-term focus 	Japan (2) China (7) France (13)
	Healthy Economies	<ul style="list-style-type: none"> ✓ Stable, healthy, mid-size economies ✓ Favorable business environments ✓ Reliable investors in electricity infrastructure 	Australia (4) Chile (8) Singapore (6)
	Recent Growth	<ul style="list-style-type: none"> ✓ Major investment growth in electricity sector ✓ Growing electricity demand ✓ Recent success and favorable competitiveness for U.S. firms 	Saudi Arabia (3) Philippines (9) Turkey (12)
MID-TABLE	Growth Competitors	<ul style="list-style-type: none"> ✓ Large markets with growing smart grid investment ✓ Highly competitive ✓ Less favorable to U.S. suppliers 	Germany (16) Korea (17)
	Emerging Smart Grid Markets	<ul style="list-style-type: none"> ✓ Low income, high growth, including in electricity demand ✓ Major infrastructure challenges ✓ Some focus on smart grid, but most opportunities in T&D 	Vietnam (10) Brazil (19) India (21)
LONGER TERM	Developing Grid Modernization	<ul style="list-style-type: none"> ✓ Lower income markets ✓ Current focus on grid modernization ✓ Addressing major issues in wider electricity sector 	Nigeria (22) Indonesia (25) South Africa (29)



ITA Smart Grid Top Markets Report

Case Study Highlights

The Smart Grid Top Markets Report includes case studies on 6 markets and a range of country-specific recommendations for U.S. Government Actions.

Recommends Markets for Trade Missions

Identifies Markets and Forums for Policy and Regulatory Engagement

Highlights Opportunities for U.S. Solutions to Technical Challenges

Provides sub-sector rankings & technology-specific opportunities for exporters



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These initiatives unlock export, and investment opportunities for U.S. businesses by combining in-depth quantitative and qualitative analysis with ITA's industry relationships. For more information, visit ***www.trade.gov/industry***.

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